

486298

ADMINISTRATIVE RECORD

BINDER DEVELOPMENT PROJECT P-204
WEEDSPORT SPRAY TESTS MAY 24, 1977

06152883

Objective:

- Evaluate CMC and Starch binders on #2 and #3 Libby Terralite.
- Repeat screening test on #1 Libby in order to reproduce results achieved on tests 9A and 12A.

Background:

Test No.'s 1 through 7 evaluated sodium silicate, oil emulsion, and lignin separately as binders (report dated May 24, 1977).

Test No.'s 9 through 12 evaluated CMC, potassium silicate, and starch as binders on #1 Libby (report dated May 31, 1977).

This test series, No.'s 13 through 16, evaluates CMC and starch on terralite vermiculite (#2 and #3 Libby). Also, test #17 repeats screening tests done on test No.'s 9A and 12A.

Test Method:

Tests were conducted as outlined in table 1, page A-1. All additives were sprayed directly into the material at the bagging spout. Flow rates versus nozzle pressures were established for bag filling times. With the exception of test #17, all bags were weighed, and six consecutive bags were selected from each test for volume checks. Drop tests and simulated attic fill tests were conducted on each test material. Standard quality control checks were taken for all test materials.

Volume checks, simulated attic fill tests and drop tests will be conducted at 30 and 60 day intervals to determine the effect of time on shrinkage and fiber levels.

This test report does not contain results on simulated attic fill fiber counts. Results will be analyzed and an addendum issued when received.

Conclusions:

1. Screening does not reduce airborne fibers in Libby #2.
2. Screening does reduce airborne fibers in Libby #1.

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Conclusions, Continued:

3. A 14 mesh screen reduces airborne fibers as much as a 5 mesh screen with less product loss.
4. In both Libby #2 and #3, CMC added at 0.20 qt./cf gave the greatest reduction in drop test airborne fibers. In Libby #2 the reduction was 86%, and in Libby #3 the reduction was 84%.
5. None of the products drop tested meet the goals of 0.2 f/ml T.W.A. and 1.0 f/ml maximum on 15 min. exposure.
6. In order to meet this goal (T.W.A.), the reduction on Libby #2 would need to have been 98.4% and in Libby #3, 96.8%.
7. Yield losses were 6 to 7% in Libby #2 and 4 to 5% in Libby #3.
8. Yield losses are the same for both starch and CMC additives.
9. Screening reduces the heavy particles in the product.

Recommendations:

1. Have all plants screen #1 on a 14 mesh screen.
2. If binders have to be used on terralite #2 and #3, apply 0.5% CMC + 0.01% War at 0.20 qts./cf.
3. Test higher concentrations of additives.
4. Intensify efforts at air separation.

Results:

1. Screening on Libby #2 did not reduce airborne fiber counts (Table 2, page A-2). Test 13A (unscreened L#2) had a T.W.A. fiber count of 12.40 f/ml versus test 13AS-1 (screened L#2) which had a T.W.A. fiber count of 14.96 f/ml. A comparison between screened and unscreened #3 was not made in this series.

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Binder Development Project P-204
Weedsport Spray Tests May 24, 1977
Page 3

Results, Continued:

2. Using a 5 mesh screen on Libby #1 reduced the T.W.A. airborne fiber count by 66% (Test 17AS-1); a 14 mesh screen reduced the T.W.A. airborne fiber count by 58% (Test 17AS-2).

Comparison of the previous screening tests on Libby #1 (test 9A and 12A, table 2, page A-2) indicates that screening Libby #1 does reduce the airborne fiber count. Also, the 14 mesh screen appears to do as good a job as a 5 mesh screen. A 5 mesh screen produced approximately 22% by weight screenings and 15% by weight cyclone fines. A 14 mesh screen produced approximately 3% by weight screenings and 9% cyclone fines. (assuming 24 bags L#1 = 120 lbs.)

Further tests are necessary to evaluate how much yield is lost by screening on Libby #1.

3. Starch binder addition reduced the T.W.A. airborne fiber count on Libby #2 by 47% at 0.194 qt./cf addition rate (Test 13BS) and 64% at 0.402 qt./cf addition rate (Test 2-page A-2)
4. CMC binder addition reduced the T.W.A. airborne fiber count on Libby #2 by 86% at 0.219 qt./cf addition rate (Test 16 BS) and 83% at 0.419 qt./cf addition rate (Test 16 CS) (Table 3 page A-2).
5. Starch binder addition reduced the T.W.A. airborne fiber count on Libby #3 by 31% at 0.212 qt. /cf addition rate (Test 14 BS) and 75% at 0.384 qt. /cf addition rate (Test 14 CS) (Table 2, page A-2).
6. CMC binder addition reduced the T.W.A. airborne fiber count on Libby #3 by 84% at 0.196 qt. /cf addition rate (Test 15 CS) and 77% at 0.386 qt. /cf addition rate (Test 15BS-1) (Table 2, page A-2).
7. None of the drop tests meet the goal of 0.2 f/ml T.W.A. or 1.0 maximum for 15 min. exposure (Table 2, page A-3). The best result for Libby #2 was test 16BS which had a drop test maximum in 10 mins of 2.14 f/ml and a T.W.A. of 1.71 f/ml. The best result for Libby #3 was test 15CS which had a drop test maximum in 10 mins of 1.71 f/ml and a T.W.A. of 1.00 f/ml.

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Results, Continued:

8. In order to meet the 0.2 f/ml T.W.A. goal airborne fiber counts on 13A (12.4 f/ml) would need to be reduced 98.4% and on 14 AS (6.2 f/ml) they would need to be reduced 96.8%.
9. The lowest T.W.A. airborne fiber counts for both Libby #2 and Libby #3 were obtained from 0.5% CMC +0.01% War at the lower addition rate of approximately 0.20 qt./cf (Table 2, page A-2)
10. Yield losses from shrinkage after 3 days storage were 6 to 7% for Libby #2 and 4 to 5% for Libby #3 (Table 4, page A-4). The volumes will be re-checked in 30 days and 60 days to measure the effect of time on shrinkage.
11. A comparison of yield losses between starch and CMC, at the same addition rate, as shown on Table 6, page A-6, indicates that except for Libby #2 at 0.20 qt. /cf addition rate, the losses are generally the same.
12. Comparison of heavy particles in Test 13A (unscreened) versus 13 AS (screened) shows the reduction of heavy particles in the screened product. (Table 5, page A-5)
13. Bulk densities, heavy particles, moisture pickup and vac are all normal.
14. Nozzle pressures and flow rates were calibrated for bagging times at each bagging spout (A-7, and 8).



M. M. Williams
6/15/77

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A-1 -

TABLE 1

<u>Test No.</u>	<u>Ore</u>	<u>Conditions.</u>	<u>Additive</u>	<u>Flow Rate gt./cf</u>	<u>Bags Produced</u>
13A	#2L	Control	-	-	
13AS-1	#2L	14 mesh screen	-	-	50
13AS-2	#2L	14 mesh screen Bag hopper vent open	-	-	50
					10
13BS	#2L	14 mesh screen	2% starch 0.01% War	0.194	50
13CS	#2L	14 mesh screen	2% starch 0.01% War	0.402	50
14AS	#3L	14 mesh screen	-	-	
14BS	#3L	14 mesh screen	2% starch 0.01% War	0.212	50
					50
14CS	#3L	14 mesh screen	2% starch 0.01% War	0.384	50
15BS	#3L	14 mesh screen	2% starch 0.01% War	0.212	50
15BS-1	#3L	14 mesh screen	0.5% CMC 0.01% War	0.386	50
15CS	#3L	14 mesh screen	0.5% CMC 0.01% War	0.196	50
16BS	#2L	14 mesh screen	0.5% CMC 0.01% War	0.219	36
16CS	#2L	14 mesh screen	0.5% CMC 0.01% War	0.419	36
17A	#1L	Control	-	-	
17AS-1	#1L	5 mesh screen	-	-	30
17AS-2	#1L	14 mesh screen	-	-	30
					30

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TABLE 2

Test No.	Ore	Screen	Binder		Drop Test Analysis f/ml		
			Type	Rate ct./cf	Min.	Max.	T.W.A.
13A	L#2	None	Control		9.41	15.39	12.40
13AS-1	L#2	14M	-	-	12.83	20.52	14.96
13BS	L#2	14M	2% starch 0.01% War	0.194	5.13	7.70	6.56
13CS	L#2	14M	"	0.402	3.85	5.99	4.49
14AS	L#3	14M	-	-	2.57	11.54	6.20
14BS	L#3	14M	2% starch 0.01% War	0.212	1.28	5.99	4.28
14CS	L#3	14M	"	0.384	0.86	2.57	1.57
15BS-1	L#3	14M	0.3% CMC 0.01% War	0.386	0.43	2.14	1.43
15CS	L#3	14M	"	0.196	0.86	1.71	1.00
16BS	L#2	14M	"	0.219	1.71	2.14	1.71
16CS	L#2	14M	"	0.419	1.28	4.70	2.07
17A	L#1	None	-	-	9.83	23.09	16.25
17AS-1	L#1	5M	-	-	3.42	8.12	5.49
17AS-2	L#1	14M	-	-	4.28	9.41	6.84
*9A	L#1	None	-	-	10.26	28.22	17.245
*12A	L#1	14M	-	-	5.99	23.94	11.045

* 9A and 12A are added for ease in comparison.

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A-3

TABLE 3

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Batch No.	Ore	Time (Min)	Bags	Nozzle	Pressure	Additive (qt./cf)	Cyclone		
							Overs (lbs.)	Unders (lbs.)	Fines (lbs.)
13A	L#2	43	50	-	-	-	928	-	N.A.
13AS-1	L#2	42	50	-	-	-	903	-	7.8
AS-2	L#2	8	10	-	-	-	170	-	N.A.
13BS	L#2	41	50	3/8 GG9.5	10 psig	0.194 (Starch)	1024	N.A.	N.A.
13CS	L#2	43	50	3/8 GG9.5	44 psig	0.402 (Starch)	1080	8.9	N.A.
14AS	L#3	35	50	-	-	-	972	147.9	37.6
14BS	L#3	39	50	3/8 GG9.5	12 psig	0.212 (Starch)	1040	167.7	66.4
14CS	L#3	41	50	3/8 GG9.5	50 psig	0.384 (Starch)	1139	200.3	119.1
15BS	L#3	35	50	3/8 GG9.5	12 psig	0.212 (Starch)	1037	167.6	73.3
15BS-1	L#3	34	50	1/2 GG16	18 psig	0.386 (CMC)	1125	112	93.8
15CS	L#3	38	50	3/8 GG9.5	12 psig	0.196 (CMC)	1068.6	174.4	85.6
16BS	L#2	25	36	3/8 GG9.5	12 psig	0.219 (CMC)	710.2	15.5	19.2
16CS	L#2	26	36	1/2 GG16	18 psig	0.419 (CMC)	752.7	14.4	15.5
17A	L#1	N.A.	30	-	-	-	N.A.	-	-
17AS-1	L#1	N.A.	30	-	-	-	N.A.	41.1	28.0
17AS-2	L#2	N.A.	30	-	-	-	N.A.	4.0	12.9

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TABLE 4

<u>Test No.</u>	<u>Ore</u>	<u>Initial Volume</u>	<u>+3 Day Volume</u>	<u>Loss cf</u>	<u>%</u>
13A	L#2	4.10	4.03	0.07	1.7
13AS-1	"	4.16	4.11	0.05	1.2
13BS	"	4.20	3.90	0.30	7.1
13CS	"	4.04	3.72	0.32	7.9
14AS	L#3	4.02	3.97	0.05	1.2
14BS	"	3.90	3.74	0.16	4.1
14CS *	"	4.07	3.86	0.21	5.2
14CS *	"	4.08	3.93	0.15	3.7
15BS	"	3.94	3.84	0.10	2.5
15BS-1	"	3.97	3.75	0.22	5.5
15CS	"	3.97	3.75	0.22	5.5
16BS	L#2	3.89	3.76	0.13	3.3
16CS	"	3.81	3.55	0.26	6.8

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TABLE 5

Test No.	Ore	Bulk Density (pcf)	Heavy Particles (%)	Moisture Pickup (%)	Vac
13A	L#2	4.71	3.1	5.74	82
	"	4.66	1.2	5.73	78
13AS	"	4.39	0.1	5.93	90
	"	4.54	0.8	5.64	82
13BS	"	5.14	1.0	5.16	80
	"	4.77	0.3	5.44	78
13CS	"	4.88	0.2	4.78	85
	"	5.04	1.0	5.0	85
14AS	L#3	4.82	0.2	5.74	84
	"	4.82	0.8	5.92	88
14BS	"	5.09	0.5	5.80	82
	"	4.71	0.2	6.13	89
14CS	"	5.09	0.6	5.72	88
	"	5.36	1.0	5.56	89
15BS	"	5.09	0.5	6.13	89
	"	5.09	0.5	5.70	85
15BSI	"	5.95	0.3	5.57	80
	"	6.06	0.5	5.24	83
15CS	"	5.63	0.6	5.61	81
	"	5.63	0.8	5.96	80
16BS	L#2	4.77	1.0	5.76	94
16CS	"	5.36	0.5	4.53	87

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TABLE 6

<u>Test No.</u>	<u>Ore</u>	<u>Additive</u>	<u>Nominal Rate qt./cf</u>	<u>Volume Loss</u>
13BS	L#2	Starch	0.20	7.1%
16BS	L#2	CMC	0.20	3.3%
13CS	L#2	Starch	0.40	7.9%
16CS	L#2	CMC	0.40	6.8%
14BS	L#3	Starch	0.20	4.1%
15CS	L#3	CMC	0.20	5.5%
14CS	L#3	Starch	0.40	5.2%
15BS-1	L#3	CMC	0.40	5.5%

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06150893

JUN 17 1977

DISTRIBUTION

E. S. Wood
J. W. Wolter
H. C. Duecker
B. R. Williams
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R. H. Locke
R. E. Schneider
D. D. Walczyk/Proj. File

June 13, 1977

15152153

[123Z00147]

06152894

GRACE

Zonolite
Construction Products Division

ADDENDUM TO REPORT DATED APRIL 21, 1977
"MONOKOTE FIBER REDUCTION BY SCREENING"

Objective: Screen Libby #3 as a means of further reducing fibers in MONOKOTE.

Results of Drop Tests: Drop tests were conducted to compare standard Libby #3 and Libby #3 cyclone fines to screened Libby #3 both overs and unders, and also cyclone fines. The results are plotted on Pages A-1 through 5. The control L#3 had a T.W.A. of 8.2 f/ml versus 7.41 f/ml for the overs and 10.4 f/ml for the unders. The control cyclone fines had a T.W.A. of 4.70 f/ml versus a T.W.A. of 2.43 f/ml for the cyclone fines collected during the screening test.

In a trial to develop a more consistent drop test, the amount of material was increased to 84 cu. ft. On Pages A-6 and 7 a drop test on control Libby #3 using 84 cu. ft. of material had a T.W.A. of 17.1 f/ml versus a T.W.A. of 11.83 f/ml for the screened material.

Conclusions:

1. Screening did not reduce airborne fiber levels on Libby #3 to any great extent.
2. A larger amount of material will give higher airborne fiber levels. More testing would be required to determine if it is more reproducible than the standard test now used.



M. M. Williams
6/13/77

MMW:mt

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VERXLT-F TYPE S REFNING TESTS ON L#3 F.R. MONDROSE

4/19/77

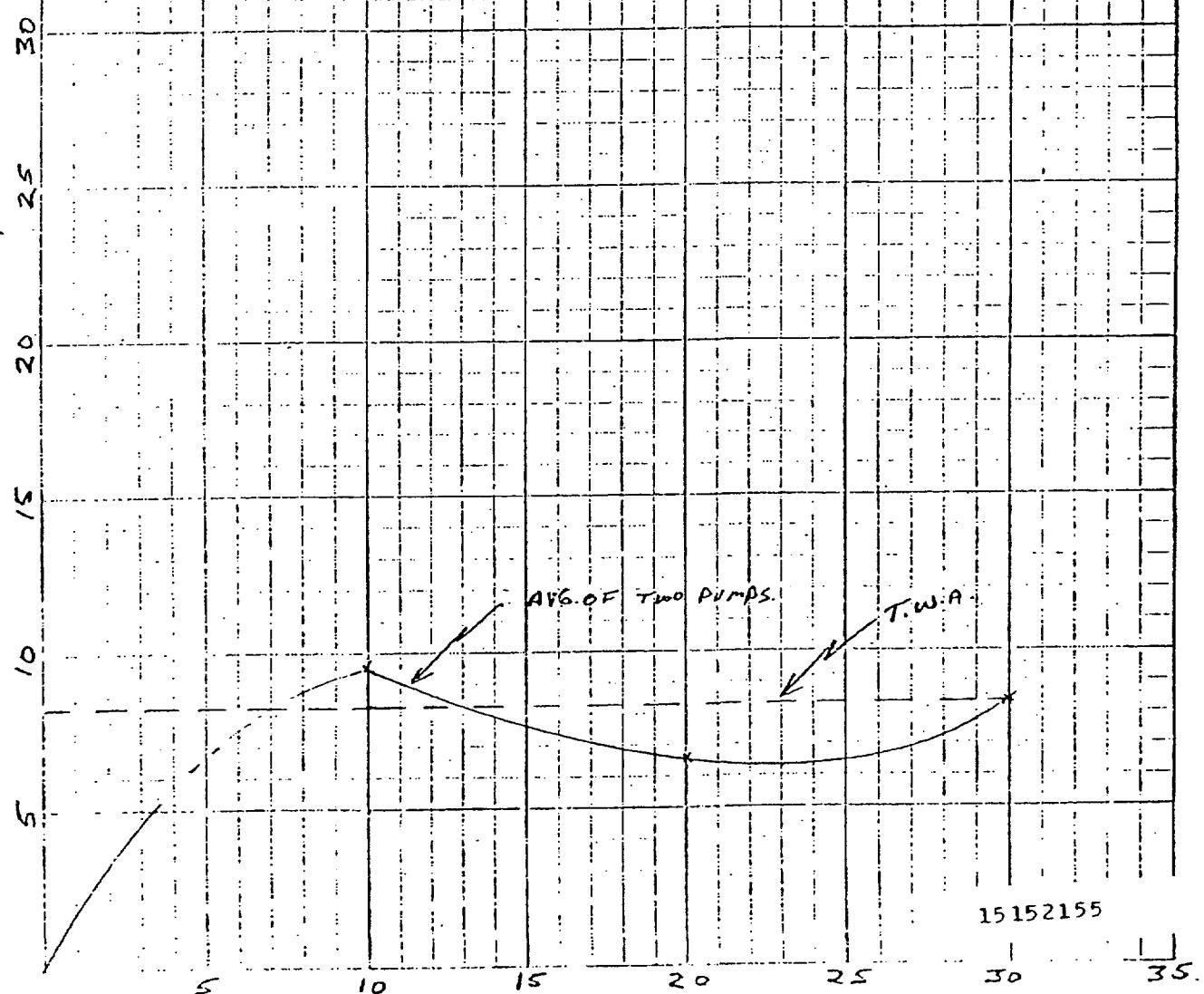
L#3 CONTROL DROP TEST 06152895

STANDARD DROP TEST

USING 1G CF OF MATERIAL.

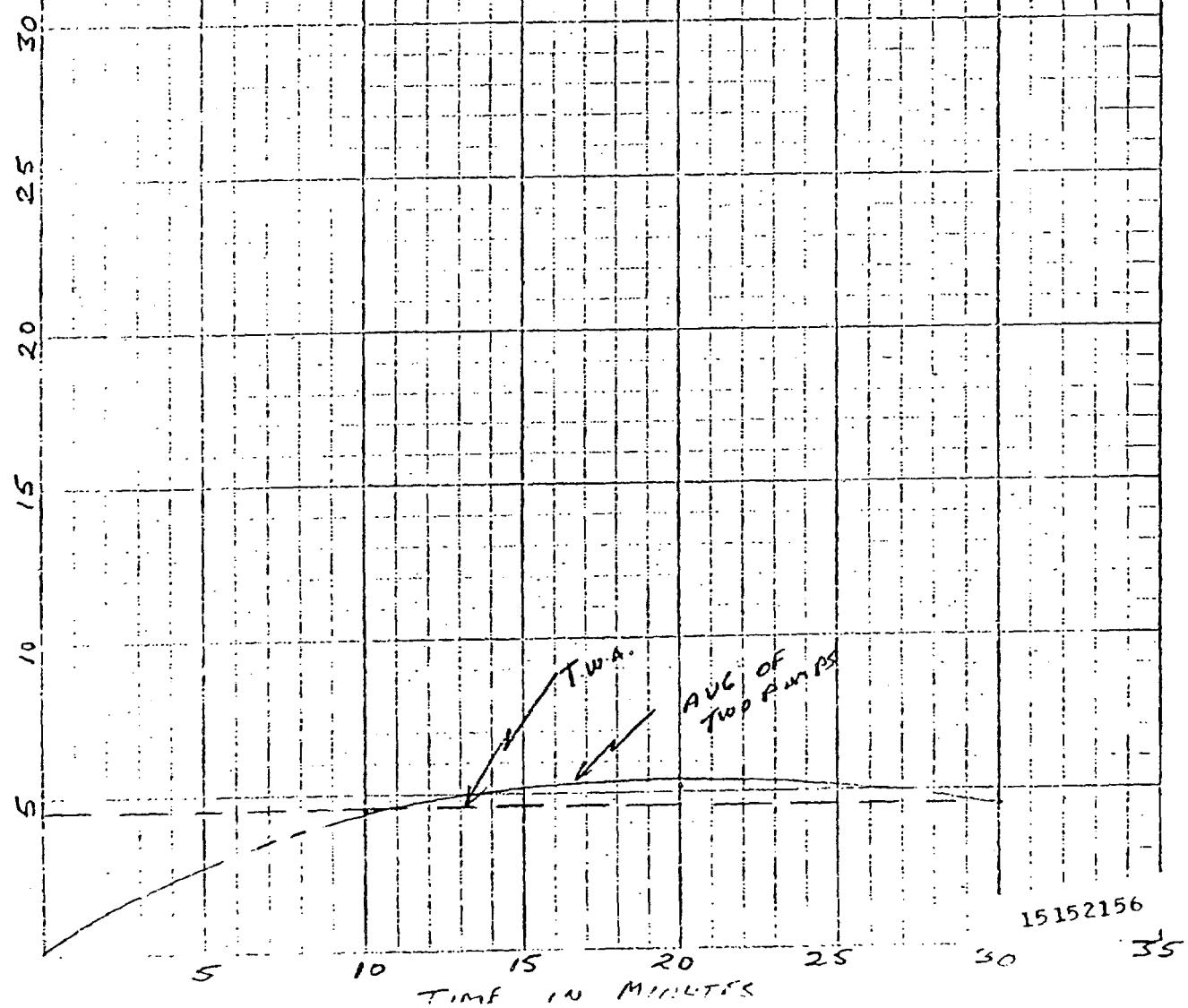
SAMPLING TIME. 10 MIN/PUMP

NO. PUMPS - Two



VEEXLITE TYPE SCREENING TESTS ON 6" 3 F.O. MDAKKA
06152896

L-5 CONTROL CYCLONE FINES.
SI 4 NARROW TEST USING 16cf.
01' MATERIAL.
SAMPLING TIME 10MIN/cf
No. PUMPS - TWO.



123Z00150

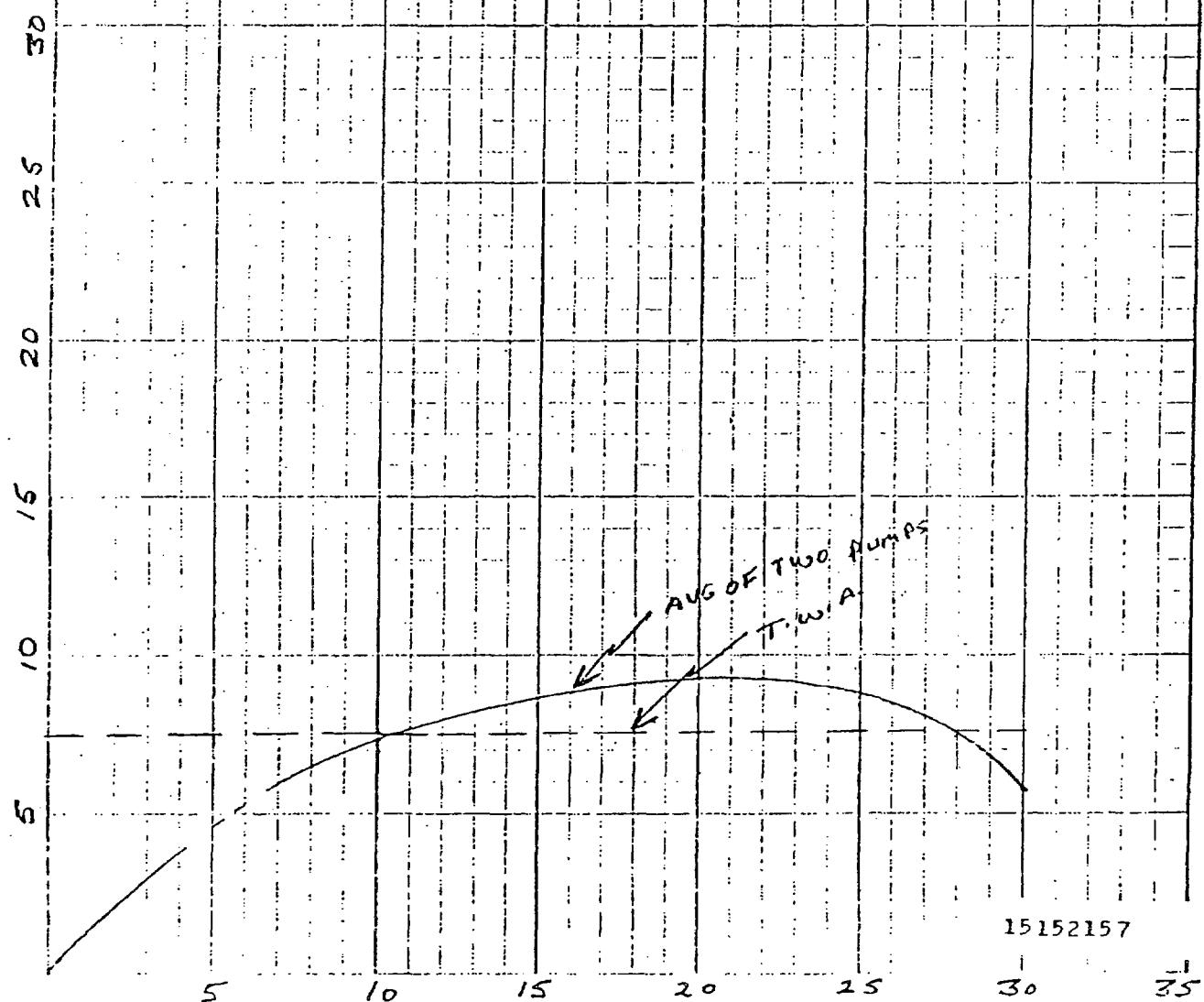
VERXITE - TYPE SCREENING TESTS - ON L #3 FOR MONOKORI.

11-3

9/20/77

06152887

L #3 SCREENED OVERS.
S - STANDARD DRAEA TEST
USING 16 CF OF MATERIAL.
SAMPLING TIME, 10 MIN/PUMP.
NO PUMPS - TWO.



15152157

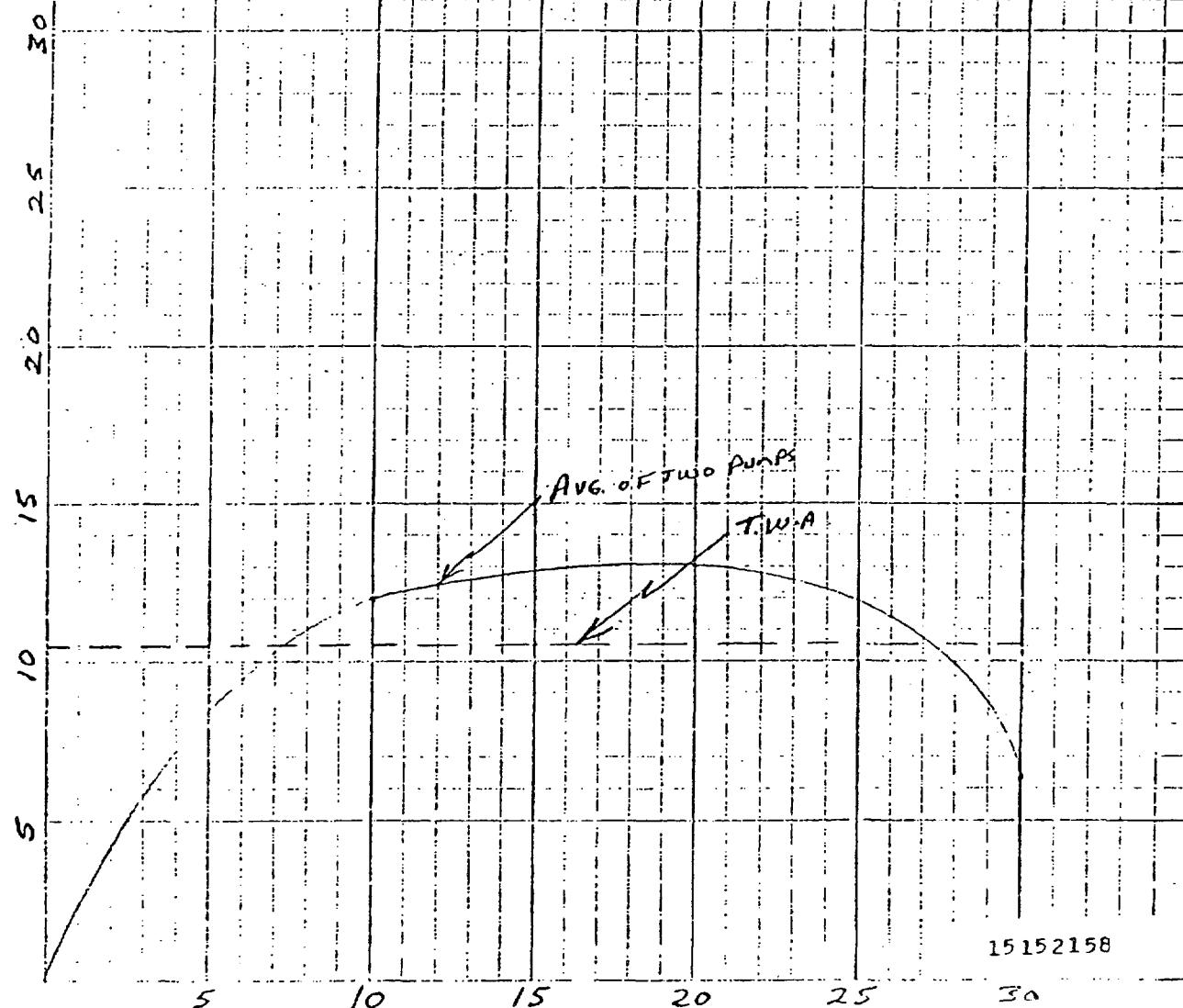
123Z00151

VERXITE TYPE SCREENING TESTS ON L#3 FOR MONOKOTE

4/20/77

L#3 SCREENED UNDERS
STANDARD DROP TEST
USING 16 CS OF MATERIAL
SAMPLING TIME, 10 MIN/PUMP
NO PUMPS - TWO.

CC252898



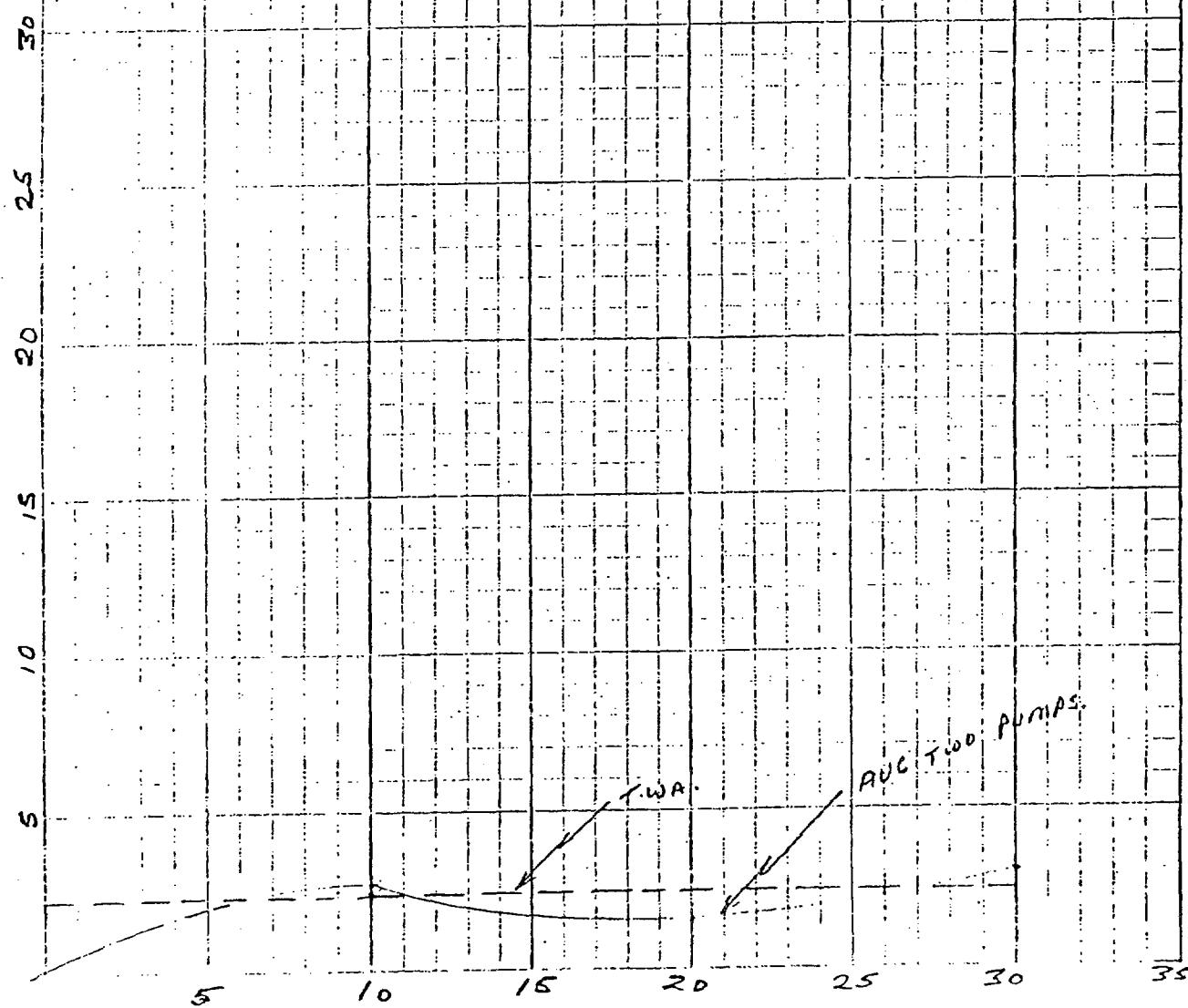
7x5.7x7.7 in. 40 OZ/ft.
7x10 inches. made in U.S.A.
KUFFEL & ESSER CO.

123Z00152

VERXITE TYPE SCREENING TESTS ON L^{1/2} IN. MONKARD

06152889

L^{1/2} (SCREENED) CYCLONE FINES.
STANDARD TEST USING 16 CF.
OF MATERIAL
SAMPLING TIME 10 MIN / PUMP
NO PLUMAS - TWO.



VERXITE TYPE SCREENING TESTS ON L⁴₃ FOR MONOKETL.

9/19/77
06152900

L⁴₃ CONTROL DROP TEST

RISING 84 cu ft OF MATRIX MATERI

SAMPLING TIME 5 MIN/PUMP

NO. OF PUMPS - THREE.

PUMPS STARTED 3 MIN AFTER

START OF DROP TEST.

30

25

20

15

10

5

12 9 6 3 10 4 16 15 H 4 3 0 6 1 3
24 7 2 10 9 15 S 1 1 1 1 1 1 1 1
Kurff's Eason Co.

AVERAGE OF THREE PUMPS.

T.W.A.

15152160

1 5 10 15 20 25 30 35

123Z00154

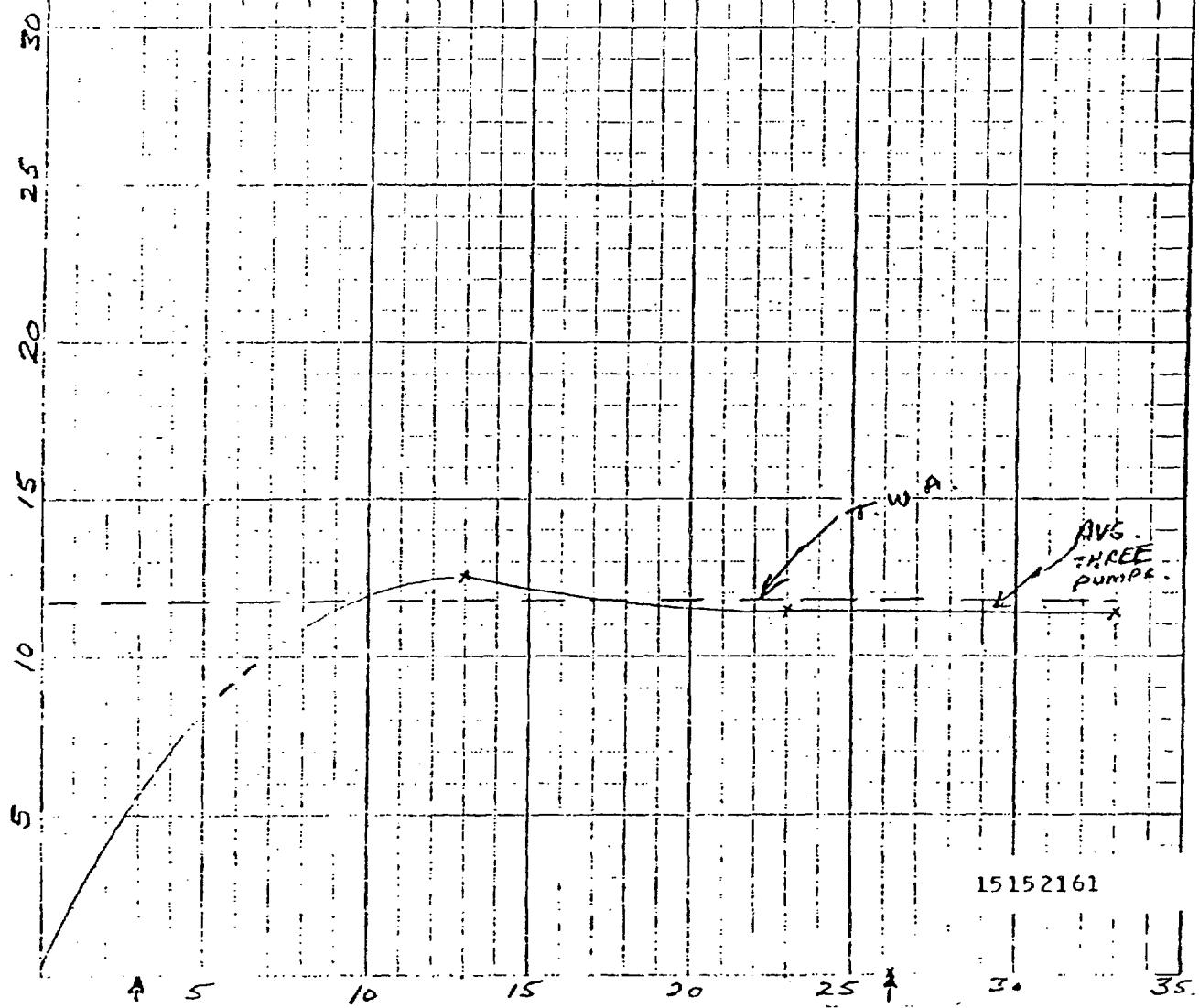
11-1

VERKITE TYPE SCREENING TESTS ON L^{H3} FOR MONOKOTE

06282902

120/77

L^{H3} SCREENED OVER 8' DROPP TEST.
USING 8.4 cu ft OF MATRIX
SAMPLING TIME, 10 MIN/pump.
NO OF PUMPS - THREE.
PUMPS STARTED 3 MIN AFTER SPILL
OF DROPP TEST.



15152161

123Z00155

MONOKOTE HIGH 420-15
10 GALS
KEUFFEL & SORREN CO.

GRACe CONFIDENTIAL

VERITE TYPE L[#]3 FOR MINERALS

A-8

123200156

PLANT LOCATION WEEDSPORT
 CONTAMINANT FIBER
 SAMPLING BY F. W. EATON
 DATE: 4/18/77

SAMPLING CONDITIONS:
 OUTSIDE Frigid 60°
 INSIDE DRAFT _____
 VISIBLE DUST _____

HOUSEKEEPING:

NOTE CHANGE IN DROP TEST PROCEDURES

Sample Number	Employee Name	Job Location and Description	Remarks	Pump Number	Pump Off	Pump On	Sampling Time	Flow Rate	Total Sampled Volume	Lab Evaluation
1-A1		Drop Test	L [#] 3 Control	10G-1	1640	1635	5	1.6	10.32	
1-B1			Drop time on binder test	10G-6		1635			16.25	
1-C1			#3 (L [#] 3) was 3 min 15 sec.	10G-7	↓	1635	↓	↓	16.25	
1-A2	I		ON THIS DROP TEST, MAT'L DROPPED FOR 3 MIN 0 SEC	10G-5	1640	1640	5	1.6	15.16	
1-B2			BEFORE SAMPLING PLATES WERE TURNED ON.		↓	↓	↓	↓	15.16	
1-C2					↓	↓	↓	↓	16.25	
21-A3			MAT'L STOPPED DROPPING	1150	1645	1645	5	1.6	17.1	
21-B3			2 MIN 40 SEC AFTER THE START OF		↓	↓	↓	↓	18.95	
21-C3	15152162		SAMPLES C1 - A2 & C2.		↓	↓	↓	↓	18.95	

- Additional Comments: (1) #3-CCP BAGS (#CCP) IN DUST WORKER Laboratory Evaluation by: W. Eaton Date: 4/18/77
- (2) ALL CYCLONE FILTERS REMOVED
- (3) DUST DUE TO DUST 10 SEC.
- (4) DURING FIRST SAMPLE DUST IN ROOM DID NOT ALLOW TO GET DUSTY. AT THE END OF DUST

06162302

GRAC CONFIDENTIAL

VERITE TYPE L#3 FOR MONOHORE

A9

AIR SAMPLING RECORD SHEET

123200157

PLANT LOCATION WEEDSPORTCONTAMINANT ELBERSAMPLING BY F.W. EATONDATE: 4/19/72

SAMPLING CONDITIONS:

OUTSIDE

INSIDE DRAFT

VISIBLE DUST

HOUSEKEEPING:

Sample Number	Employee Name	Job Location and Description	Remarks	Pump Number	Pump Off	Pump On	Sampling Time	Flow Rate	Total Sampled Volume	Lab Evaluation
A1			L#3 CONTROL			1755	10	1.6	19.62	15.35
B1			4-4 CF BAGS (16CF)			1755				5.58
A2			NORMAL DUST TEST PROCEDURE					8.20	6.63	12.26
B2	I		All CYCLONE FINES REMOVED							2.57
-A3								8.24	8.63	
-B3			DUST TIME 3 MIN. 20 SEC.				↓	↓	8.12	
-A1			L#3 CONTROL CYCLONE FINES		1900	10	1.6	14.49	5.18	
-B1			4-4 CF BAGS (16CF)		1900				5.13	
-A2	Prints		NORMAL DUST TEST PROCEDURE					4.75	5.13	7.70
-B2	I/V		VERY DUSTY !!							5.62
-A3			FILTER CF-31 PICKED UP MORE DUST THAN CF-31 WHY?					4.49	4.42	
-B3			DUST TIME 4 MIN 5 SEC				↓	↓		

Additional Comments: Compare C results with G1 Laboratory Evaluation By: John F. EatonDate: 4/19/72

15152163

05022903

~~CONFIDENTIAL~~ VERKIE TYPE L #3 FOR NIMONOTE
AIR SAMPLING RECORD SHEET

A-1D

123Z00158

PLANT LOCATION WEEDSPORT
CONTAMINANT FIBER
SAMPLING BY F.W. EATON
DATE: 4/20/77

SAMPLING CONDITIONS:

OUTSIDE FAIR 60°

INSIDE DRAFT

VISIBLE DUST

HOUSEKEEPING:

NOTE CHANGE IN DROP TEST PROCEDURE

Sample Number	Employee Name	Job Location and Description	Remarks	Pump Number	Pump Off	Pump On	Sampling Time	Flow Rate	Total Sampled Volume	Lab Evaluation
SI-A1		DROP TEST	L#3 SCREENED OVERS	ICG-6	0925		10	1.6	(11.7)	
SI-B1			MAT'L. DROPPED 3 MIN BEFOR	ICG-1					12.84	
SI-C1			SAMPLING PUMPS VERKIE TURNED ON.	ICG-7		↓	↓	↓	8.45	
SI-A2							10	1.6	12.1	
SI-B2	I								11.83	11.54
SI-C2							↓	↓	11.2	
SI-A3			MAT'L STOPPED DROPPING				10	1.6	11.55	
SI-B3			3 MIN 10 SEC AFTER START OF						11.4	11.5
SI-C3	15152164		SAMPLES SI-A3, B3 & C3				↓	↓	11.1	

- Additional Comments: ① 15-6CF BAGS (50CF) IN DROP HYD. Laboratory Evaluation By: J. L. Eaton Date: 4/20/77
 ② ALL SCREENS FILTER REMOVED
 ③ SIGHTS GOOD. 100% 1/6 LOCATION EXHAUST - BAG ON TOP. NO C1 FILTERS. 200 CF/HOUR, 1000 MM
 WITH 100% C. AND C. = 100%

06152204

GRACO CONFIDENTIAL

AIR SAMPLING RECORD SHEET

A-1

PLANT LOCATION WEGOSPORT

CONTAMINANT FIBER

SAMPLING BY F.W. EATON

DATE: 4/20/77

SAMPLING CONDITIONS:

OUTSIDE

INSIDE DRAFT

VISIBLE DUST

HOUSEKEEPING:

123200Z9

Sample Number	Employee Name	Job Location and Description	Remarks	Pump Number	Pump Off	Pump On	Sampling Time	Flow Rate	Total Sampled Volume	Lab Evaluation
S-A1		Drop Test	L #3 SCREENED OVERS	10G-6		1100	10	1.6		{ 8.10
S-B1	Prin		4-4CF BAGS	10G-1		1130			7.27	{ 6.46
S-A2	I								7.11	{ 9.35
S-B2									9.19	{ 9.38
S-A3									5.78	{ 8.35
S-B3			Drop Time 3 min. 18 sec.							{ 7.70
SV-A1			L #3 SCREENED UNDERS	1350		10	1.6			{ 11.42
SV-B1	Prin		4-4CF BAGS	1350					11.98	{ 13.32
SV-A2	IK		Dusty During Drop					10 ml	13.04	{ 13.32
SV-B2										{ 13.32
SV-A3									6.2	{ 11.42
SV-B3			Drop Time 3 min. 17 sec.							{ 11.42

Additional Comments:

Laboratory Evaluation by: J. Langford, Jr., M.S.P.H.

Date: 4/23/77

15152165

06452305

123Z00160

GRACE CONFIDENTIAL

VERITI: TYPE L^A3 FOR MONOXYDE

A-12

PLANT LOCATION WSEDSFRT
CONTAMINANT FIBER
SAMPLING BY F. M. ENRON
DATE: 4/23/77

SAMPLING CONDITIONS:
OUTSIDE _____
INSIDE DRAFT _____
VISIBLE DUST _____

HOUSEKEEPING:

Additional Comments:

Laboratory Evaluation By: *Wingfield, J. H., M.D.*

Date: 9/26/77

9035190